

Preliminary Amendment

Applicant: Mark A. Smith et al.

Filed: Herewith

Docket No.: 10001074-1

Title: INK CONTAINER CONFIGURED TO ESTABLISH RELIABLE FLUIDIC CONNECTION TO A RECEIVING STATION

REMARKS

This Preliminary Amendment is responsive to the Advisory Action mailed on August 28, 2002, in which the rejection of claims 1-8 and 10-20 was maintained. With this Preliminary Amendment, claims 1, 10 and 16 have been amended. Claims 1-8 and 10-20 remain pending in the application and are presented for consideration and allowance.

Claim Rejections under 35 U.S.C. § 103

Claims 1-8 and 10-20 were rejected under 35 U.S.C. § 103 (a) as being unpatentable over Tomikawa (U.S. Patent 6,039,441) in view of Ma et al. (U.S. Patent 5,085,698). Tomikawa et al. is said to disclose in Figures 1a, 1b and 5b a replaceable ink container for providing ink to an inkjet printing system, and a method of forming a seal. The inkjet printing system is said to include a printhead 21 and a receiving station 27 for receiving the replaceable ink container. The receiving station is said to have a fluid inlet 24 and a sealing structure 22. The replaceable ink container is said to comprise a reservoir 2 having a fluid outlet 11 and a sealing surface 14 proximate thereto. A sealing material (ink) is said to be contained to within the reservoir 2 for wetting the sealing surface to seal defects between the sealing surface and the sealing structure. Specific reference is made to column 5, lines 59-60 of Tomikawa et al. However, Tomikawa et al. is said not to disclose a sealing material containing solid particles held in suspension. Nevertheless, Ma et al. is said to disclose an ink containing carbon black particles for the purpose of providing black pigment, and a dispersant for the purpose of dispersing the carbon black particles. Specific reference was made to column 8, lines 38-39, and column 9, lines 29-30 and 40-41 of Ma et al. Therefore, the Examiner has taken the position that it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide Tomikawa et al. with ink containing carbon black particles and a dispersant as taught by Ma et al. for the purpose of providing black pigment and dispersing the pigmented particles.

In response, claim 1 has been amended and is now directed to a replaceable ink container for providing ink to an inkjet printing system having a receiving station for receiving the replaceable ink container. The receiving station has a fluid inlet and a sealing structure. The replaceable ink container comprises a fluid reservoir defining a fluid outlet

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and a sealing surface proximate the fluid outlet, and a sealing material contained within the reservoir for wetting the sealing surface. The sealing material includes solid particles held in suspension. Solidification of the solid particles **between the sealing surface and the sealing structure** acts to seal defects between the sealing surface and the sealing structure.

Using a sealing material that contains solid particles that come out of a suspension and solidify **between** the sealing surface and the sealing structure creates an improved seal between the sealing surface of the replaceable ink container and the sealing structure of the receiving station. This improved seal seals defects in the sealing surface and/or the sealing structure. The improved seal thereby prevents the loss of volatiles from ink within the container and minimizes the transfer of air into the ink delivery system resulting in improved printing system reliability and an improvement in the quality of printed images. A replaceable ink container having a sealing material including solid particles held in a suspension, where solidification of the solid particles **between the sealing surface and the sealing structure** acts to seal defects between the sealing surface and the sealing structure is simply not taught, disclosed or anticipated by Tomikawa et al.

Tomikawa et al. in Figures 1a, 1b, 2a and 2b is directed to a replaceable ink tank 1 insertable into a holding member 27 of a printing system. The holding member 27 includes a recording head 21 and an elastic jointing member 22. The ink tank 1 includes an ink chamber 2 having a joint port 11 which is connectible to the elastic jointing member 22 to deliver ink from the ink chamber 2 to the recording head 21. The elastic jointing member 22 includes an umbrella shaped portion that engages a depressed part 14 of the ink tank 1 to form a hermetic seal therebetween.

Tomikawa et al. does not disclose what is now claimed in amended independent claim 1. In particular, Tomikawa et al. does not disclose that the sealing material contained within the reservoir includes solid particles held in suspension, where solidification of the particles **between the sealing surface and the sealing structure** acts to seal defects between the sealing surface and the sealing structure. Rather, in Tomikawa et al. there is no support for a sealing material within an ink container for wetting the area **between** a sealing surface of the ink container and a sealing structure of a receiving station. There is also no support that solid particles held in suspension in the sealing material solidify **between** the sealing surface and the sealing structure. The Examiner has referenced column 5, 59-60 of Tomikawa et al.

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which states “when the ink tank 1 is detached from the recording head 21, a small amount of ink sticks to the depressed part 14, and no ink drips from the ink tank 1.” This language clearly does not anticipate the wetting of the depressed part 14 such that the area between a sealing surface of the ink container and a sealing structure of a receiving station occurs. In fact, the language cited by the Examiner clearly indicates that the depressed part 14 is not wetted until ink tank 1 is detached from the recording head 21. Thus, no wetting of the area between depressed part 14 and jointing member 22 occurs until **after** ink tank 1 is separated from holding member 27 of the printing system. As such, there is no ink between depressed part 14 and jointing member 22 and it is not possible for solidification of solid particles held in suspension between the sealing surface and the sealing structure to occur, as is set forth in amended independent claim 1. Rather, it is clear from a complete review of Tomikawa et al. that Tomikawa et al. in fact wants to minimize the amount of ink on depressed part 14.

The language cited by the Examiner in Tomikawa et al. clearly does not suggest or make obvious the wetting of the area **between** a sealing surface of the ink container and a sealing structure of a receiving station as set forth in amended claim 1, since ink can adhere to portions of the depressed part 14 not contacted by the elastic jointing member 22. Further, the language cited in Tomikawa et al. does not suggest or make obvious solidification of the solid particles between the sealing surface and the sealing structure acting to seal defects between the sealing surface and the sealing structure.

Ma et al. does not remedy the deficiency of the primary reference Tomikawa et al., since Ma et al. is merely directed to an ink formula comprising aqueous carrier medium and particles of pigment stabilized by a pigment dispersant that is an acrylic block polymer. Hence, like Tomikawa et al., there is no support whatsoever in Ma et al. for a sealing material within an ink container wetting the area **between** a sealing surface of the ink container and a sealing surface of a receiving station, and solidifying **between** the sealing surface and the sealing structure.

The language cited by the Examiner in Tomikawa et al. more fully states, “When the top edge 33 is brought into contact with the face of the depressed part 14 of the ink tank 1 and an ink passage is formed thereat, a contact area of the depressed part 14 where it contacts ink is small since the opening of the umbrella-like portion 31 is small. Accordingly, when the ink tank 1 is detached from the recording head 21, a small amount of ink sticks to the

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depressed part 14, and no ink drips from the ink tank 1.” Thus, Tomikawa et al. is describing the advantage of having only a small portion of the depressed part 14 in contact with ink, to minimize the dripping of ink from the ink tank 1. Importantly, the opening of the umbrella-like portion 31 is small to ensure that the contact area of the depressed part 14 what contacts ink is also small. This suggests that ideally, the contact area of the depressed part 14 where it contacts ink should be minimized. This is very different from the invention as claimed in the amended claim 1, where the presence of sealing material on the sealing surface is encouraged and in fact desirable such that solidification of the solid particles in the sealing material may occur between the sealing surface and the sealing structure.

For the reasons set forth above, Applicants believe the combination of Tomikawa et al. and Ma et al. does not disclose, teach, suggest or make obvious, either implicitly or explicitly, what is claimed by Applicants in amended independent claim 1. Applicants therefore believe that the rejection of independent claim 1 under 35 U.S.C. § 103(a) has been overcome and should be withdrawn. Such action is respectfully requested.

Independent claims 10 and 16 have been amended to include language similar to that referred to above in connection with independent claim 1. As such, the remarks above directed to independent claim 1 are equally applicable to independent claims 10 and 16. Therefore, for the reasons set forth above, Applicants believe that the combination of Tomikawa et al. and Ma et al. does not disclose, teach, suggest or make obvious, either explicitly or implicitly, what is claimed by Applicants in independent claims 10 and 16. Therefore, Applicants believe that the rejection of independent claims 10 and 16 under 35 U.S.C. § 103(a) has been overcome and should be withdrawn. Such action is respectfully requested.

Independent claim 7 has not been amended, but does include language similar to that referred to above in connection with independent claim 1. Specifically, independent claim 7 claims a method for forming a seal between a replaceable ink container and a sealing structure, the method comprising wetting a sealing surface on the replaceable ink container with a sealing material defined by solid particles held in a suspension which is contained within the replaceable ink container, and engaging the sealing surface with a sealing structure, **whereby the sealing material is disposed therebetween**, and solidifying the sealing material so that the solid particles fall out of the suspension and seal defects between

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the sealing surface and the sealing structure. The remarks above directed to independent claim 1 are therefore equally applicable to independent claim 7. In addition, in the method of independent claim 7, the method discloses wetting a sealing surface on the replaceable ink container **prior to engaging the sealing surface with a sealing structure in the reservoir**. As elaborated on above, this is distinctly different from what is shown and described in Tomikawa et al., where the small amount of ink sticks to the depressed part 14 **after** the ink tank 1 is detached from the recording head 21. Therefore, for the reasons set forth above, Applicants believe that the combination of Tomikawa et al. and Ma et al. does not disclose, teach, suggest or make obvious, either implicitly or explicitly, what is claimed by Applicants in independent claim 7. Hence Applicants believe that the rejection of independent claim 7 under 35 U.S.C. § 103(a) has been overcome and should be withdrawn. Such action is respectfully requested.

Dependent claims 2-6, 8, 11-15 and 17-20 are directly or indirectly dependent upon independent claims 1, 7, 10, and 16. As discussed above, it is believed that independent claims 1, 7, 10, and 16 are now in condition for allowance. Therefore, consideration and allowance of dependent claims 2-6, 8, 11-15 and 17-20 is also requested.

CONCLUSION

In conclusion, it is believed that claims 1-8 and 10-20 of this application are now in condition for allowance. A notice to that effect is respectfully requested.

Any inquiry regarding this Preliminary Amendment should be directed to either Matthew B. McNutt, Esq. at Telephone No. (612) 573-2000, Facsimile No. (612) 573-2005 or Kevin B. Sullivan, Esq. at Telephone No., (858) 655-5228, Facsimile No. (858) 655-5859. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,
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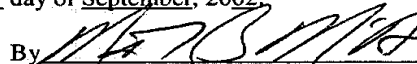
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By 

Name: Matthew B. McNutt

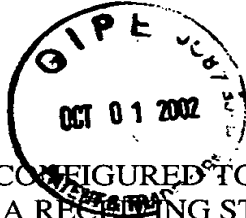
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

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Commissioner for Patents
Washington, D.C. 20231

PRELIMINARY AMENDMENT

Sir/Madam:

This Preliminary Amendment accompanies the Request for Continuing Examination filed herewith, and is responsive to the Advisory Action mailed August 28, 2002. Please amend the above-identified patent applications as follows:

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IN THE CLAIMS

Please amend claims 1, 10 and 16 as follows:

1. (Twice Amended) A replaceable ink container for providing ink to an inkjet printing system, the inkjet printing system having a receiving station for receiving the replaceable ink container, the receiving station having a fluid inlet and a sealing structure, the replaceable ink container comprising:
 - a reservoir defining a fluid outlet and a sealing surface proximate the fluid outlet; and
 - a sealing material contained within the reservoir for wetting the sealing surface, the sealing material including solid particles held in a suspension, solidification of the solid particles between the sealing surface and the sealing structure acting to seal defects between the sealing surface and the sealing structure.
2. (Amended) The replaceable ink container of claim 1 wherein the solid particles are pigment particles.
3. (Amended) The replaceable ink container of claim 1 wherein the solid particles are carbon black particles.

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4. (Amended) The replaceable ink container of claim 1 wherein the suspension is a dispersant.

5. (Amended) The replaceable ink container of claim 1 wherein the sealing material contained within the reservoir is a quantity of ink.

6. The replaceable ink container of claim 1 wherein the sealing surface is configured to be sufficiently wettable such that the sealing surface is wet by the sealing material.

7. (Amended) A method for forming a seal between a replaceable ink container and a sealing structure, the method comprising:

 wetting a sealing surface on the replaceable ink container with a sealing material defined by solid particles held in a suspension which is contained within the replaceable ink container;

 engaging the sealing surface with a sealing structure whereby the sealing material is disposed there between; and

 solidifying the sealing material so that the solid particles fall out of the suspension and seal defects between the sealing surface and the sealing structure.

8. The method of claim 7 wherein the sealing material is an ink contained within the replaceable ink container.

9. (Cancelled)

10. (Twice Amended) A replaceable ink container for providing ink to an inkjet printing system, the inkjet printing system having a receiving station for receiving the replaceable ink container, the receiving station having a fluid inlet and a sealing structure, the replaceable ink container comprising:

 a storage reservoir having a capillary storage material disposed therein for retaining ink, the storage reservoir defining a fluid outlet and a sealing surface proximate the fluid outlet; and

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an ink retained within the capillary storage material, the ink having particles suspended therein, the particles solidifying ~~on~~between the sealing surface and the sealing structure to seal defects between the sealing surface and the sealing structure.

11. (Amended) The replaceable ink container of claim 10 wherein the particles are pigment particles.

12. (Amended) The replaceable ink container of claim 10 wherein the particles are carbon black particles.

13. The replaceable ink container of claim 10 wherein the ink further includes a dispersant.

14. The replaceable ink container of claim 10 wherein the sealing surface proximate the fluid outlet is configured to be wetted by the ink stored within the ink container.

15. (Amended) The replaceable ink container of claim 10 wherein the sealing surface is configured for enhanced wettability such that the sealing surface is wet by the ink.

16. (Twice Amended) A replaceable printing component for an inkjet printing system configured for receiving the replaceable printing component, the inkjet printing system having a fluid inlet and a sealing structure, the replaceable printing component comprising:

a sealing surface configured for engaging a corresponding sealing structure on the inkjet printing system; and

wherein the sealing surface is configured so that sealing material, defined by solid particles held in a suspension, wets the sealing surface so that solidification of the solid particles between the sealing surface and the corresponding sealing structure seals defects between the sealing surface and the corresponding sealing structure.

17. The replaceable printing component of claim 16 wherein the replaceable printing component is a replaceable ink container.

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18. The replaceable printing component of claim 16 wherein the replaceable printing component is a replaceable printhead.
19. The replaceable printing component of claim 16 wherein sealing material is pigmented ink.
20. (Amended) The replaceable printing component of claim 16 wherein the sealing surface engages the corresponding sealing structure on the inkjet printing system to form a face seal.